

Supplementary Data 4

Analysis of total complications

After multivariate logistic regression analysis the following preoperative characteristics were found significantly associated with the occurrence of “medical” and “surgical” complications: age ≥ 75 years, hypertension, cardiac disease, pulmonary disease, pharmacologically treated psychiatric disorder, anaemia and use of walking aids (Supplementary Data 2 Table 1 for results of logistic regression). The AUC was between 0.70 and 0.71 regardless of weighting. The risk of developing a complication leading to either LOS >4 days or readmission was 49.8% if all 7 predictors were present prior to surgery, but no patients had all 7 predictors and only 36 (0.5%) patients had 6. No combinations of predictors had a NPV of <0.94 but the highest PPV was only 0.29 (≥ 5 predictors), and those patients contributed only 2.1% of the population (Supplementary Data 4 table 2). Thus, despite a NNT of 14 in case of a hypothetical intervention reducing total complications by 25%, only 12 (2.5% of all) complications would have been prevented if applying it to patients with ≥ 5 predictors in this study cohort (Supplementary Data table 2).

Supplementary data 4 table 1

Outcome: total complications Preoperative characteristic	<u>univariate logistic regression</u>		<u>multiple logistic regression</u>	
	Odds ratio (95%CI)	p-value	Odds ratio (95%CI)	p-value
Female vs male	1.06 (0.85-1.32)	0.5493		
Total hip arthroplasty vs total knee arthroplasty	1.21 (0.97-1.50)	0.0781	1.19 (0.93-1.53)	0.1324
Smoking	1.14 (0.85-1.52)	0.3804		
Alcohol use >2 units/day	0.81 (0.52-1.28)	0.3049		
Age ≥75	2.78 (2.23-3.45)	<0.0001	1.94 (1.50-2.50)	0.0007*
Use of walking aid	3.51 (2.81-4.38)	<0.0001	2.31 (1.79-2.98)	0.0002*
Living alone vs with others	1.72 (1.39-2.14)	0.0009	1.10 (0.85-1.43)	0.4070
Body mass index >30	0.96 (0.76-1.21)	0.6937		
Anemia*	2.47 (1.91-3.19)	0.0001	1.68 (1.25-2.24)	0.0049*
Hypertension	1.88 (1.50-2.36)	0.0005	1.33 (1.03-1.71)	0.0354*
Hypercholesterolemia	1.41 (1.12-1.77)	0.0101	1.06 (0.79-1.41)	0.6519
Use of anticoagulants	2.23 (1.54-3.22)	0.0018	1.29 (0.90-1.85)	0.1672
Previous venous thromboembolic event	1.90 (1.30-2.76)	0.0058	1.12 (0.71-1.77)	0.5692
Previous stroke/ transient cerebral ischemia	1.48 (1.01-2.19)	0.0477	1.20 (0.77-1.86)	0.3503
Antihyperglycemic treatment for diabetes	1.64 (1.21-2.23)	0.0075	1.19 (0.93-1.3)	0.1394
Pharmacologically treated psychiatric disorder	2.18 (1.64-2.89)	0.0005	1.83 (1.35-2.48)	0.0028*
Pharmacologically treated cardiac disease	2.24 (1.72-2.92)	0.0003	1.49 (1.11-2.02)	0.0170*
Pharmacologically treated pulmonary disease	1.93 (1.39-2.68)	0.0027	1.59 (1.10-2.30)	0.0215*

Any variable with a $p \leq 0.1$ were included for step-wise multiple regression analysis. The final model included only variables with $p < 0.05$ and a total of 7954 procedures with 480 outcomes. ¹defined as a hemoglobin of <13g/dL in males and <12 g/dL in females *included in the final model

Supplementary data 4 Table 2 Predictive ability of combinations of significant predictors. Number of included patients is 7954 due to 9.0% with missing data on relevant predictors.

Total complications n: 480	Age ≥75 years (27.1)	239 (11.1)	1919	49.8	72.8	49.79	74.32	0.11	0.96	18	27	36	120	80	60
	Walking aids (24.1)	240 (12.5)	1678	50.0	75.9	50.00	77.55	0.13	0.96	16	24	32	120	80	60
	Hypertension (52.2)	312 (7.5)	3843	65.0	49.6	65.00	48.58	0.08	0.96	27	40	53	156	104	78
	Anaemia (12.4)	119 (12.0)	870	24.8	84.5	24.79	88.36	0.12	0.95	17	25	33	60	40	30
	Psych. disorder (11.6)	100 (10.9)	820	20.8	84.9	20.83	89.03	0.11	0.95	18	28	37	50	33	25
	Pulmonary disease (7.4)	62 (10.6)	524	12.9	88.2	12.92	92.99	0.11	0.94	19	28	38	31	21	16
	Cardiac disease (12.4)	110 (11.1)	877	22.9	84.3	22.92	88.27	0.11	0.95	18	27	36	55	37	28
	≥3 predictors (20.6)	231 (14.1)	1407	48.1	79.2	48.13	81.17	0.14	0.96	14	21	28	116	77	58
	≥4 predictors (7.3)	117 (20.2)	463	24.4	89.6	24.38	93.81	0.20	0.95	10	15	20	59	39	29
	≥5 predictors (2.1)	46 (28.6)	115	9.6	93.1	9.58	98.46	0.29	0.94	7	11	14	23	15	12

PPV: positive predictive value NPN: negative predictive value NNT 50: number needed to treat if a 50% event reduction NNT 30: number needed to treat if a 30% event reduction NNT 25: number needed to treat if a 25% event reduction AE 50: avoided events in the cohort with 50% event reduction AE 30: avoided events in the cohort with 30% event reduction AE 25: avoided events in the cohort with 25% event reduction TKA: total knee arthroplasty THA: total hip arthroplasty MPEH: "medical" predictors excluding hypertension